



## 165 HP Gearbox Disassembly And Assembly Procedure.

### DISASSEMBLY



1. Remove the cotter pin (T5-052), M42x3 nut (T5-054A), output seal guard (T5-048), and the output oil seal (T5-065) from the output shaft.



2. Remove the top cover (T5-035). Clean sealant from the surface.



3. Remove cover opposite to the input shaft (T5-037). Remove any shims found. Remove any remaining gasket material.
4. Tap the input shaft to remove the tapered roller bearing (T5-060) on the opposite side. Remove the input shaft (T5-039 1 3/4" x 6 spline or T5-039-20 1 3/4" x 20 spline), the crown gear and the inner race of the tapered roller bearing (T5-064).
5. Remove the other cover (T5-036) and the oil seal (T5-066).
6. Remove indentations from lock nut (T5-044A).



7. Place an appropriate spanner socket on the lock nut. Be sure the pins are completely engaged.
8. Unscrew the locking ring using an impact wrench. The ring can be difficult to loosen because of the threadlocking compound (Loctite).
9. Remove the spacer (T5-045 on 540 rpm, T5076A on 1000 rpm).



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11. Remove the output shaft (T5-040), along with the inner races of the of the tapered roller bearing sets.



12. Remove the outer races of the tapered roller bearing sets from the casting.



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1. Clean the surfaces and install the outer races of the tapered roller bearing sets (T5-061) and (T5-062) into the housing.
2. Check that the outer races of the tapered roller bearing sets are firmly seated in the bores.
3. Place the bearing of the tapered roller bearing set (T5-062) on the output shaft (T5-040).
4. Install the shaft in the housing.
5. Install the bearing of the tapered roller bearing set (T5-061) onto the shaft.
6. Place the pinion gear (gear set T5-069A, 540 rpm or T5-076S, 1000 rpm) on the output shaft.
7. Place the spacer onto the shaft. This spacer may be different from that shown depending upon the ratio of the gearbox, (T5-045 on 540 rpm, above gear, T5076A on 1000 rpm, below gear).





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8. Apply Loctite 242 on the lock nut thread (T5-044A).
9. Screw a NEW lock nut (T5-044A) on the output shaft until the play of the bearings is completely removed.
10. Preload the bearing. The correct preload is achieved when rotating torque of output shaft is 20 -26 Kg-cm (17 - 23 lb-in).
11. Bed the output shaft by a sharp blow from a soft faced hammer.
12. Check the preload of the bearings with the rotating torque given above.
13. Indent both sides of the lock nut firmly into the slots in the shaft.
14. Install (on the input shaft side) the outer race of the 33209 bearing set (T5-064) in the bore from which the input shaft will protrude. Place a 0.2 mm (0.008") shim on the outer ring of the bearing.
15. Install the oil seal (T5-066) in the cover (T5-036).
16. Place a new gasket (T5-047) and lightly lubricate with grease.
17. Install the cover including the oil seal and gasket on the housing and tighten the M10x25x1.5 bolts. Tightening torque 4.7 -5 Kg-m (408 - 434 in-lb).





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18. Place the bearing of the of the tapered roller bearing set (T5-061) and the crown gear (gear set T5-069A, 540 rpm or T5-076S, 1000 rpm) in the housing.



19. Install the input shaft (T5-039 1 3/4" x 6 spline or T5-039-20 1 3/4" x 20 spline), and the taper roller bearing (T5-060). Seat the shaft until all play is removed.



20. Place the gasket on the other cover (T5-047) and measure the gap between the shoulder and the gasket.



21. Measure the gap between the housing and the race of the bearing. The thickness of shims to be used is given by the difference between the two measurements, minus 0.1 mm (0.004")

22. Place the calculated thickness of shims on the outer bearing race.

23. Install the cover, tighten the bolts and seat the input shaft with a blow from a soft faced hammer.



Check the gear backlash (0.20 - 0.30 mm) with a dial indicator. If the backlash is more than 0.30 mm, remove shim(s) from the opposite side of the crown gear and add the same shim(s) on the rear side of the crown gear. If the backlash is less than 0.20 mm remove shim(s) from the rear side of the crown gear and add the same shim(s) on the opposite side of the crown gear.



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Check the contact (mesh) of the gears. If necessary to move the contact from the bottom side (heel) of the gear toward the inner side (toe), add shims under the top bearing of the output shaft. Shims are available in the following thicknesses:

0.60 mm (T5-071)

0.80 mm (T5-072)

1.00 mm (T5-073)



25. Apply RTV sealant to the top surface of the housing and install the top cover using the M10x20x1.5 (T5-050) bolts. Tightening torque 4.7 - 5 Kg-m (408 - 434 in-lb).

26. Install the oil filler / oil level / breather plug and the oil drain plug.



27. Lubricate the oil seal (T5-065) and the surface of the output shaft, in order to ease the installation of the oil seal.

28. Install the oil seal.



29. Install the seal protector (T5-048).

30. Screw the M42x3 nut (T5-054A) onto the shaft to protect the threads during installation onto the cutter. Fill gearbox with correct amount of gearbox oil (T5-LUBE), after installation on cutter.